LISTING OF THE CLAIMS

1. ~~Image~~An image recognition system, comprising regularly disposed optical channels having ~~a~~at least one microlens and at least one detector, which is situated in ~~the~~a focal plane thereof and extracts at least one image spot from ~~the~~a microimage behind the microlens, ~~the~~an optical axes of the individual optical channels having different inclinations in such a manner that they represent a function of ~~the~~a distance of the optical channel from ~~the~~a centre of ~~the~~a side of the image recognition system which is orientated towards the image, by means of which ~~the~~a ratio of ~~the~~a size of ~~the~~a field of view to ~~the~~an image field size can be determined specifically, and detectors are used with such high sensitivity that these have a large pitch with a small active surface area.

2. ~~Image~~The image recognition system according to claim 1, ~~characterised in that~~wherein each optical channel detects at least one specific solid angle segment of the object space as corresponding image spot so that ~~the~~a totality of the transmitted image spots on the detector ~~array~~ allows reconstruction of the object.

3. ~~Image~~The image recognition system according to claim 1, ~~characterised in that the~~wherein a central spacing, ~~i.e.~~or pitch, of the microlenses differs slightly from ~~the~~a pitch of the detectors in order to ensure a different inclination of the optical axes for the individual channels.

4. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the individual microlenses differ with respect to ~~decentralisation~~decentralization relative to the detector, ~~the~~a focal distance, ~~the~~conical and/or aspherical parameters and hence enable different inclinations of the optical axes.

5. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein microprisms which enable different inclinations of the optical axes are integrated in the individual microlenses.

6. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the individual microlenses are disposed on a base which has a convex or concave configuration and hence enable different inclinations of the optical axes.

7. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the detectors are disposed on a base which has a convex or concave configuration.

8. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the optical channels are free of off-axis aberrations for ~~the~~ different inclinations of the optical axes.

9. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the individual optical channels have at least one of: (i) different pitch differences between microlens and detector; and~~/or~~ (ii) at least one pinhole for correction of distortion.

10. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the image recognition system has a constructional length of less than 1 mm.

11. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that the~~ wherein a number of optical channels is in the range of about 10 x 10 to 1000 x 1000.

12. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that the~~ wherein a size of the optical channels is in the range of about 10 µm x 10 µm to 1 mm x 1 mm.

13. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the regular arrangement of the optical channels are packed tightly in at least one of: (i) a square, (ii) ~~or~~ a hexagon ~~or are~~, and (iii) a ~~-~~rotational-symmetrical arrangement.

14. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the positions of the microlenses and of the detectors are precisely defined lithographically.

15. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the optical channels are optically isolated from each other.

16. ~~Image~~The image recognition system according to ~~the preceding~~ claim 15, ~~characterised in that~~wherein the optical isolation is effected by lithographically produced separating walls.

17. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the detectors are present as at least one of: (i) a CCD, (ii) a CMOS photosensor array, and ~~/or~~ (iii) a photosensor array comprising a polymer.

18. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein at least a part of the microlenses is anamorphic.

19. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the optical channels respectively have a plurality of detectors of one or more different functions.

20. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein pinhole diaphragms are disposed behind the

microlenses and directly in front of the detectors and are positioned such that at least one pinhole diaphragm is assigned to each microlens.

21. ~~Image~~The image recognition system according to ~~the preceding~~ claim 20, ~~characterised in that~~wherein the ratio of the active surface of the detector to the active surface area of the microlens is adjustable in order to fix light strength and resolution power through the pinhole diaphragm.

22. ~~Image~~The image recognition system according to ~~the preceding~~ claim 20, ~~characterised in that~~wherein the pinhole diaphragms have a diameter in the range of about 1 to 10 µm.

23. ~~Image~~The image recognition system according to ~~one of the two preceding claims~~claim 20, ~~characterised in that~~wherein the pinhole diaphragm is produced from a metal or polymer coating or combinations thereof.

24. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the image recognition system has ~~in addition~~ a liquid lens which is pre-connected between image and microlenses in order to adjust the field of view.

25. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein light sources are disposed on or between the optical channels.

26. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein a pixel is assigned to each optical channel.

27. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein a plurality of pixels is assigned to each optical channel.

28. ~~Image~~The image recognition system according to ~~the preceding~~ claim 27, ~~characterised in that~~wherein a plurality of pixels with different properties or groups of pixels of the same properties are present.

29. ~~Image~~The image recognition system according to ~~one of the two preceding claims~~claim 27, ~~characterised in that~~wherein colour filters are disposed in front of a plurality of similar pixels.

30. ~~Image~~The image recognition system according to ~~one of the claims~~ claim 27 ~~to 29~~, ~~characterised in that~~wherein a plurality of similar pixels at a greater spacing is disposed in an optical channel in order to increase the light strength without loss of resolution.

31. ~~Image~~The image recognition system according to ~~one of the claims~~ claim 27 ~~to 30~~, ~~characterised in that the~~ wherein a plurality of pixels per optical channel is disposed such that the optical axes of at least two optical channels intersect in one object spot in order to enable a stereoscopic 3D photograph and/or a distance measurement.

32. ~~Image~~The image recognition system according to ~~one of the claims~~ claim 27 ~~to 31~~, ~~characterised in that~~wherein dispersive elements for colour photos are disposed in front of or on the microlenses.

33. ~~Image~~The image recognition system according to ~~one of the claims~~ claim 27 ~~to 32~~, ~~characterised in that~~wherein differently orientated gratings or structured polarisation filters are disposed in front of similar pixels of an optical channel in order to adjust the polarisation sensitivity.

34. ~~Image~~The image recognition system according to ~~one of the preceding claims~~claim 1, ~~characterised in that~~wherein the image recognition system is combined with at least one liquid crystal element.

35. The image recognition system according to claim 1~~Use of the image recognition system according to one of the claims 1 to 34 as~~, wherein the image recognition system is an integral component in a flatly-constructed small ~~appliances, such as e.g.~~appliance taken from the group consisting of clocks, notebooks, PDAs or organisers, mobile telephones, spectacles or clothing items.

36. The image recognition system according to claim 1~~Use of the image recognition system according to one of the claims 1 to 34~~, wherein the image recognition system is operable for monitoring, security technology and ~~also~~ for checking and implementing access or use authorisation.

37. The image recognition system according to claim 1~~Use of the image recognition system according to one of the claims 1 to 34 as~~, wherein the image recognition system is operable for integration in a camera in a chip card or credit card.

38. The image recognition system according to claim 1~~Use of the image recognition system according to one of the claims 1 to 34 in~~, wherein the image recognition system is operable for integration in equipment used for medical technology~~, e.g. in endoscopy~~.

39. The image recognition system according to claim 1~~Use of the image recognition system according to one of the claims 1 to 34 as~~, wherein the image recognition system is operable for monitoring tasks in the interior and exterior of vehicles~~sensor system in the automobile field, e.g. for monitoring tasks in the interior and exterior of vehicles~~.

40. The image recognition system according to claim 1~~Use of the image recognition system according to one of the claims 1 to 34 in the~~, wherein the image recognition system is operable for intelligent cockpit monitoring in the aircraft industry~~, e.g. for integrated and intelligent cockpit monitoring~~.

41. The image recognition system according to claim 1~~Use of the image recognition system according to one of the claims 1 to 34 for~~, wherein the image recognition system is

operable for at least one of iris recognition, fingerprint recognition, object recognition and movement detection~~, in particular 3D movement tracking~~.